To the Editor,

New technologies have improved the effectiveness of treatments for cardiovascular diseases, yet these technologies pose poorly explored challenges. Therefore, a study was conducted in Spain to find out about the perspective of doctors and administrators on the implications of technology in the management of coronary artery disease and peripheral arterial disease.

The insights and perspectives of doctors and administrators were obtained using the Delphi method following the RAND/UCLA Appropriateness Method (RUAM).\(^1\) A scientific committee including 6 cardiologists, 1 vascular surgeon, and 1 interventional radiologist selected the panel of doctors (16 cardiologists, 3 endocrinologists, 3 vascular surgeons, 1 internist, and 1 surgeon specialized in diabetic foot disease), and administrators (12 administrators from both the public and private sectors) (annex 1 of the supplementary data). The doctors' questionnaire had 112 items and the administrators' one 79 (74 items were common to both panels). The panelists scored the relevance of each item on a scale from 1 (irrelevant) to 9 (maximum relevance). «Agreement» was defined as less than a third of the panelists giving scores from 1 to 3 to a given item, and less than a third gave scores from 7 to 9. «Low relevance» items were those whose median scores were < 4, «high relevance» items with median scores ≥ 7, and «medium relevance» items with median scores ≥ 4 and < 7.\(^1\) Concordance between doctors and administrators in the 74 items studied was measured using the kappa index (κ).\(^1\) Figure 1 shows the study diagram.

Some of the «high relevance» items scored by doctors and administrators had to do with technology improving patient care, the identification of risk factors, the ability to treat patients from the start with the corresponding reduction of readmissions and costs, and with the ability to achieve more accurate diagnoses. Doctors believe that the best measure to identify patients at risk is to improve relations with primary care. Reduced time spent with each patient, the scarcity of resources to make patients change their lifestyles, and the lack of facilities available for rehabilitation purposes are significant limitations for doctors. Doctors and administrators believe that within the next few years better solutions will come along for the diagnosis and treatment of cardiovascular diseases. However, some of the barriers they refer to are the difficulties referring patients for early interventional procedures or the scarcity of personnel for the early management of patients (tables 1-23 of the supplementary data).

Compared to administrators, doctors insist that technology requires training, which requires time they don’t have (figure 2A). Administrators, however, insist that technology allows the proper sizing of the healthcare personnel (figure 2B; tables 24-32 of the supplementary data). The differences found are indicative of a moderate level of agreement between doctors and administrators (κ = 0.408)\(^6\) (table 1).

These findings suggest that both doctors and administrators believe that technological advances have improved patient care. However, they also identify certain barriers. The moderate level of agreement between doctors and administrators is understandable, but the success of each center largely depends on this level of agreement between the two. For these reasons, different strategies have been proposed for doctors and administrators to come closer in a coherent and collaborative way.\(^3\)

These strategies and those aimed at eliminating the barriers and limitations found are particularly relevant in interventional cardiology. Recommendations on requirements and equipment in interventional cardiology recently published in Spain are some of these strategies.\(^4\) These recommendations establish the structural and functional requirements of each center regarding human resources, training, competences, and material resources. Also, they develop

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High relevance items (examples):
• The best way to identify patients at risk is to improve relations with primary care
• Imaging technology and improved electronic health records will improve patient care
• Barriers: wrong diagnoses, difficulty referring patients for early interventional procedures

High relevance items (examples):
• New technologies will facilitate more efficient appointment planning and patient processes
• They will allow the proper sizing of the healthcare personnel
• They will improve quality measures, budgetary control, reduce costs, and improve patient satisfaction

Figure 1. Summary of the study diagram.

A
Utility of tools to alleviate the burnout syndrome of the healthcare personnel to reduce costs
New technologies do not have a good return on research (which leads to working with fewer resources to stay within budget)
New technologies slow things down because the healthcare personnel do not feel comfortable using them
Data and technology require training which requires time that our healthcare personnel don’t have
Technology is a burden for the healthcare personnel
Lack of facilities for the proper recovery of patients after treatment such as cardiac rehab centers
Scarce resources so patients can change their lifestyle
Reduced time spent with each patient

B
Technology allows the proper sizing of the healthcare personnel
Solve knowledge gaps on gene mapping
Availability of digital health trackers for the patients
New technologies facilitate more efficient appointment, lab test, and patient process planning
Pharmacological advances that reduce the need for interventional procedures

Figure 2. A: items scored with the highest category of relevance by doctors vs administrators. B: items scored with the highest category of relevance by administrators vs doctors.
the model of satellite or supervised cath labs as an efficient alternative for lower level hospitals. The implementation of these strategies can improve the quality, efficiency, and equal access to interventional cardiology in Spain.

Evidence on the validity and reproducibility of the Delphi format used in our study (RUAM) plus the fact that it is the method used to develop appropriate use criteria for coronary revascularization suggests that the findings of this study represent reasonably well the perspectives of doctors and administrators on the implications of technology in the management of cardiovascular diseases, and specifically interventional cardiology in Spain.

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AUTHORS’ CONTRIBUTIONS
All authors contributed to the drafting of this manuscript.

CONFLICTS OF INTEREST
None whatsoever.

Table 1. Concordance in the category of relevance between the panel of doctors and the panel of administrators

<table>
<thead>
<tr>
<th>Relevance</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel of doctors</td>
<td>56</td>
<td>5</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>Number of items scored with relevance</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Overall</td>
<td>61</td>
<td>10</td>
<td>3</td>
<td>74</td>
</tr>
</tbody>
</table>

κ index, 0.408 (moderate level of agreement).

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SUPPLEMENTARY DATA
Supplementary data associated with this article can be found in the online version available at https://doi.org/10.24875/RECICE.M22000271.

REFERENCES